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Finnegan, Henderson, Farabow,
Garrett & Dunner, L.L.P.
1300 I Street, N.W
Washington, DC 20005-3315

EXAMINER	
CURS, NATHAN M	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/038,576	GREEN ET AL.	
	Examiner	Art Unit	
	Nathan Curs	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 January 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-70* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *8-15 and 56-59* is/are allowed.

6)☒ Claim(s) *1-6, 9-14, 16-41, 46-55 and 60-70* is/are rejected.

7)☒ Claim(s) *7 and 42-45* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 54 and 64 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claim 54, the specification does not provide any teaching that shows that the data rate of said uplink data and said downlink data is substantially the same.

Regarding claim 64, the specification does not describe, and the drawings do not show, an adjuster for adjusting the predetermined threshold value.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3-6, 16-27 and 29-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Green et al. ("Green") (WO 98/35328).

Regarding claim 1, Green discloses an optical signaling system comprising first and second signaling devices, the first signaling device comprising means for receiving an optical signal transmitted from said second signaling device and carrying uplink data transmitted from said second signaling device; an optical to electric converter for converting a portion of the received optical signal into a corresponding electric signal; means for processing the corresponding electric signal to retrieve said uplink data; means for modulating a portion of the received optical signal with downlink modulation data for the second signaling device and for reflecting the portion of the received optical signal back to the second signaling device; and the second signaling device comprising means for generating an optical signal; means for modulating the generated optical signal with said uplink data for the first signaling device; means for outputting the optical signal towards said first signaling device; means for receiving the reflected optical signal from said first signaling device carrying said downlink data; and means for retrieving the downlink data from said reflected signal (figs. 1 and 2 and page 7, line 31 to page 11, line 14); characterized in that said modulating and reflecting means also acts as said optical to electric converter (figs. 5a and 5b and page 14, line 26 to page 15, line 21).

Regarding claim 3, Green discloses a system according to claim 1, wherein said first and second signaling devices are operable to transmit said uplink data and said downlink data in a time multiplexed manner (page 20, lines 19-27).

Regarding claim 4, Green discloses a system according to claim 3, wherein said modulation, reflection and optical to electric converting means comprises an electrode which is connected, via a switch, to said processing means and to a bias voltage generator which is operable to generate a bias voltage in dependence upon the downlink data to be transmitted to said second signaling device, and wherein said time multiplex Communication is controlled by

controlling the position of said switch (page 15, line 3 to page 16, line 7 and page 20, lines 19-27).

Regarding claim 5, Green discloses a system according to claim 1, wherein said first and second signaling devices are operable to modulate different characteristics of said optical signal (page 11, line 16 to page 12, line 6).

Regarding claim 6, Green discloses a system according to claim 5, wherein said first and second signaling devices are operable to transmit said uplink data and said downlink data simultaneously (page 11, line 16 to page 12, line 6).

Regarding claim 16, Green discloses a system according to claim 1, wherein said first signaling device further comprises focusing means for focusing the received optical signal onto said reflecting means (fig. 3).

Regarding claim 17, Green discloses a system according to claim 16 wherein said focusing means comprises a telecentric lens and wherein said reflecting means is located substantially at the focal plane of said lens (fig. 3 and page 12, line 13 to page 13, line 2).

Regarding claim 18, Green discloses a system according to claim 17 wherein said telecentric lens is a wide angled telecentric lens (page 12, line 13 to page 13, line 2).

Regarding claim 19, Green discloses a system according to claim 16 wherein said modulating means is transmissive and is located between said focusing means and said reflecting means (figs. 5a and 5b and page 14, line 26 to page 16, line 7).

Regarding claim 20, Green discloses a system according to claim 1, wherein said modulating means and said reflecting means are co-located (figs. 5a and 5b and page 14, line 26 to page 16, line 7).

Regarding claim 21, Green discloses a system according to claim 1 wherein said modulating means and said reflecting means are separate elements (figs. 5a and 5b and page 14, line 26 to page 16, line 7).

Regarding claim 22, Green discloses a system according to claim 1, wherein said first signaling device comprises a plurality of modulating and reflecting means for modulating and reflecting optical signals received from a plurality of second signaling devices (fig. 4 and page 13, line 28 to page 14, line 9).

Regarding claim 23, Green discloses a system according to claim 22 wherein said plurality of modulating and reflecting means are arranged in an array (fig. 4).

Regarding claim 24, Green discloses a system according to claim 23 wherein said plurality of modulating and reflecting means are arranged in a regular array (fig. 4).

Regarding claim 25, Green discloses a system according to claim 24 wherein said plurality of modulating and reflecting means are arranged in a two dimensional array (fig. 4).

Regarding claim 26, Green discloses a system according to claim 1, wherein said reflecting means comprises a retro-reflector (page 12, line 13 to page 13, line 2).

Regarding claim 27, Green discloses a system according to claim 1, wherein said modulating means is operable to modulate at least one of the amplitude, phase, frequency or polarization of the received signal (page 11, line 16 to page 12, line 6).

Regarding claim 29, Green discloses a system according to claim 1, wherein said second signaling device is operable to transmit a message to said first signaling device and wherein said first signaling device comprises means for retrieving the message from the received signal (figs. 1 and 2 and page 7, line 31 to page 11, line 14).

Regarding claim 30, Green discloses a system according to claim 1, wherein said generating means comprises a laser, a laser diode or a light emitting diode (fig. 2, element 17).

Regarding claim 31, Green discloses a system according to claim 1, wherein said second signaling device further comprises an optical beam expander for increasing the diameter of the optical signal output towards said first signaling device (fig. 2, element 27).

Regarding claim 32, Green discloses an optical signaling method characterized by the use of a system according to claim 1 (figs. 1 and 2 and page 7, line 31 to page 11, line 14 and figs. 5a and 5b and page 14, line 26 to page 15, line 21).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Green (WO 98/35328) in view of Applicant Admitted Prior Art ("AAPA") (specification page 1, line 8 to page 2, line 4).

Regarding claims 2 and 28, Green discloses a system according to claim 1. AAPA discloses that the Green reference uses Quantum Confined Stark Effect devices for modulators (specification page 2, lines 24-27). It would have been obvious to one of ordinary skill in the art at the time of the invention that said modulating, reflecting and optical to electric converting means of Green would comprise a Quantum Confined Stark Effect device, because AAPA teaches that Green uses Quantum Confined Stark Effect devices for the modulators and Green discloses that the modulator devices modulate, reflect and perform O-E conversion.

7. Claims 33, 35-41, 46-55, 60, 61 and 65-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Green (WO 98/35328) in view of Willebrand (US Patent No. 6462847).

Regarding claims 33, 55, 60, 61 and 66-70, Green discloses a signaling system comprising first and second signaling devices, the first signaling device comprising a receiver for receiving a signal output from the second signaling device and carrying uplink data transmitted from the second signaling device; a converter for converting a first portion of the received signal into a corresponding electric signal; a processor for processing the corresponding electric signal to retrieve said uplink data; and a modulator and reflector for modulating a second portion of the received signal with downlink data for the second signaling device and for reflecting the second portion of the received signal back to the second signaling device; and the second signaling device comprising a generator for generating a signal (figs. 1 and 2 and page 7, line 31 to page 11, line 14); a modulator for modulating the intensity of the generated signal between a first non-zero intensity level and a second non-zero intensity level in dependence upon said uplink data for the first signaling device and an outputter for outputting the intensity modulated signal towards said first signaling device (fig. 2 and page 11, line 16 to page 12, line 6); a first receiver for receiving the reflected signal from said first signaling device carrying said downlink data (fig. 2, element 29); and a data retriever for retrieving the downlink data from said reflected signal (fig. 2, element 37). Green does not disclose that said second signaling device further comprises a second receiver for receiving a signal indicative of current signal attenuation characteristics of a signaling channel between said first and second signaling devices through which said output signal and said reflected signal pass, and does not disclose a controller for dynamically varying the difference in intensity between said first and second intensity levels in dependence upon the received signal indicative of the current signal attenuation characteristics of said signaling channel. Willebrand discloses a free-space optical transmission system, where

a receiver at a transceiver detects a received signal level, a controller compares the detected level representing attenuation of the free-space channel to a threshold level, and adjusts the transmit level based on the comparison (fig. 10 and col. 12, line 26 to col. 13, line 19, where varying the transmit level would result in a varying of the intensity level difference in intensity between the first and second intensity levels of the transmit signal modulation). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a second receiver and controller in the second signaling device of Green, to adjust the transmit level based on the received reflection level compared to a threshold, in order to compensate for atmospheric conditions that affect free-space optical transmission systems, as taught by Willebrand.

Regarding claim 35, the combination of Green and Willebrand discloses a system according to claim 33 wherein said first and second signaling devices are operable to transmit said uplink data and said downlink data simultaneously (Green: page 11, line 16 to page 12, line 6).

Regarding claim 36, the combination of Green and Willebrand discloses a system according to claim 33, wherein said modulator of said first signaling device is operable to intensity modulate the second portion of the received signal between third and fourth non-zero intensity levels, with the difference in intensity between the third and fourth intensity levels being greater than the difference in intensity level between the first and second intensity levels (Green: fig. 2 and page 11, line 16 to page 12, line 6).

Regarding claim 37, the combination of Green and Willebrand discloses a system according to claim 33, wherein said generator comprises a laser, a laser diode or a light emitting diode (Green: fig. 2, element 17).

Regarding claim 38, the combination of Green and Willebrand discloses a system according to claim 33, wherein said second signaling device further comprises a determining unit for determining said signal indicative of the current signal attenuation characteristics of the signaling channel between the first and second signaling devices (Willebrand: fig. 10 and col. 12, line 26 to col. 13, line 19).

Regarding claim 39, the combination of Green and Willebrand discloses a system according to claim 38, wherein said determining unit is operable to determine said measure using a measure of the signal level of the reflected signal received back from said first signaling device, as described above for claim 33, where the received signal at the second device is the signal reflected back from the first device.

Regarding claim 40, the combination of Green and Willebrand discloses a system according to claim 33, wherein said controller is operable to vary the lowest intensity level of said first and second non-zero intensity levels in dependence upon the strength of the reflected signal received back from said first signaling device (Willebrand: fig. 10 and col. 12, line 26 to col. 13, line 19, where varying the intensity level of the transmit signal includes varying the lowest intensity level of the transmit signal).

Regarding claim 41, the combination of Green and Willebrand discloses a system according to claim 40, wherein said controller is operable to vary said difference in dependence upon the lowest intensity level of said first and second intensity levels (Willebrand: fig. 10 and col. 12, line 26 to col. 13, line 19, where the transmit level will be varied if the received reflection signal's lowest intensity level is below or above the threshold level).

Regarding claim 46, the combination of Green and Willebrand discloses a system according to claim 33, wherein said first signaling device further comprises a focusing element for focusing the second portion of the received signal onto said reflector (Green: fig. 3).

Regarding claim 47, the combination of Green and Willebrand discloses a system according to claim 46, wherein said modulator is transmissive and is located between said focusing element and said reflector (Green: figs. 5a and 5b and page 14, line 26 to page 16, line 7).

Regarding claim 48, the combination of Green and Willebrand discloses a system according to claim 33, wherein said first signaling device further comprises a focusing element for focusing the first portion of the received signal onto the convertor (Green: fig. 3).

Regarding claim 49, the combination of Green and Willebrand discloses a system according to claim 46, wherein said focusing element comprises a telecentric lens and wherein said reflector and/or said convertor is located substantially at the focal plane of said telecentric lens (Green: fig. 3 and page 12, line 13 to page 13, line 2).

Regarding claim 50, the combination of Green and Willebrand discloses a system according to claim 33, wherein said modulator and said reflector are co-located (Green: figs. 5a and 5b and page 14, line 26 to page 16, line 7).

Regarding claim 51, the combination of Green and Willebrand discloses a system according to claim 33, wherein said first signaling device comprises a plurality of modulators and reflectors for modulating and reflecting optical signals received from a plurality of second signaling devices (Green: fig. 4 and page 13, line 28 to page 14, line 9).

Regarding claim 52, the combination of Green and Willebrand discloses a system according to claim 51 wherein said plurality of modulators and reflectors are arranged in an array (Green: fig. 4).

Regarding claim 53, the combination of Green and Willebrand discloses a system according to claim 33, wherein said reflector comprises a retro-reflector (Green: page 12, line 13 to page 13, line 2).

Regarding claim 54, the combination of Green and Willebrand discloses a system according to claim 33, wherein the data rate of said uplink data and said downlink data is substantially the same (Green: page 11, line 16 to page 12, line 6).

Regarding claim 65, the combination of Green and Willebrand discloses an apparatus according to claim 60, wherein said controller of said second signaling device is operable to control the transmitted signal level to be at a minimum necessary for said data retriever to be able to retrieve the modulation data from said reflected signal (Willebrand: fig. 10 and col. 12, line 26 to col. 13, line 19).

8. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Green (WO 98/35328) in view of Willebrand (US Patent No. 6462847) as applied to claims 33, 35-41, 46-55, 60, 61 and 65-70 above, and further in view of AAPA (specification page 1, line 8 to page 2, line 4).

Regarding claim 34, the combination of Green and Willebrand discloses a system according to claim 33, wherein said modulator and reflector are formed as a single device (Green: figs. 5a and 5b). AAPA discloses that the Green reference uses Quantum Confined Stark Effect devices for modulators (specification page 1, lines 24-27). It would have been obvious to one of ordinary skill in the art at the time of the invention that said modulating, reflecting and optical to electric converting means of Green would comprise a Quantum Confined Stark Effect device, because AAPA teaches that Green uses Quantum Confined Stark Effect devices for the modulators and Green discloses that the modulator devices modulate and reflect.

9. Claims 62 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Green (WO 98/35328) in view of Willebrand (US Patent No. 6462847) as applied to claims 33, 35-41, 46-55, 60, 61 and 65-70 above, and further in view of Harrington (US Patent No. 4897883).

Regarding claim 62, the combination of Green and Willebrand discloses a system according to claim 60, wherein the reflected signal received at the second signaling device inherently comprises a DC component and an AC component since the reflected signal is a free-space data transmission signal, but does not disclose that said processor comprises a filter for filtering out either the DC component or the AC component and is operable to process the filtered signal to derive said measure. Harrington discloses a free-space optical system receiver where the received signal is AC coupled using a capacitor for removing a DC ambient light component (fig. 3 and col. 3, lines 48-51). It would have been obvious to one of ordinary skill in the art at the time of the invention to AC couple the output of the detector of the combination of Green and Willebrand to remove the DC ambient light component, since this DC signal contains no data and is therefore meaningless for data detection.

Regarding claim 63, the combination of Green, Willebrand and Harrington discloses a system according to claim 62, wherein said filter is operable to filter out said DC component (Harrington: fig. 3 and col. 3, lines 48-51) and wherein said processor is operable to derive said measure by calculating an average power level of the AC component (Willebrand: col. 12, line 26 to col. 13, line 19).

Allowable Subject Matter

10. Claims 8-15 and 56-59 are allowed.

11. Claims 7 and 42-45 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (800) 786-9199.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pairdirect.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M. R. Sedighian

M. R. SEDIGHIAN
PRIMARY EXAMINER